

General Instructions: See in the [Set—I](#), Delhi Board, (Comptt.), 2006.

SECTION - A

- Q. 1.** How do red muscles differ from white muscles in regard to the number of mitochondria they contain?
- Q. 2.** Name the part of human renal tubule, which is impermeable to water.
- Q. 3.** Name the types of cross-pollination in silk cotton tree and Vallisneria respectively.
- Q. 4.** What is meant by saying that the energy flow in an ecosystem is unidirectional?
- Q.5.** What is meant by carrying capacity of the environment? **(1)**

SECTION - B

- Q.6.** What is the condition required for reverse osmosis to occur? Give one commercial use of this type of osmosis. **(2)**
- Q.7.** Write one structural and one functional difference between Chlorophyll – a and Chlorophyll-b. **(2)**
- Q.8.** What kind of nutrition is referred to, as is found in the case of Escherichia coli residing in the human intestines? Why is it called so? **(2)**
- Q.9.** Name the hormones stored in the posterior pituitary gland. Where are these hormones actually produced? **(2)**
- Q.10.** Write two differences between parthenogenesis and parthenocarpy in plants. **(2)**
- Q. 11.** What is epinasty? Name the plant hormone responsible for it. **(2)**
- Q. 12.** Name the types of organisms found in pioneer community of xerarch and hydrarch successions respectively. **(2)**
- Q. 13.** List any four factors which may lead to loss of biodiversity. **(2)**

Or

What is carbon dioxide fertilization effect? Describe its any one advantage to the plants.

- Q. 14.** What is inbreeding depression? Why do the self-pollinated crops not show the ill-effects of inbreeding depression? **(2)**

Q. 15. How are spontaneous mutations useful in nature? List any three types of changes in the nuclear material that lead to mutation. (2)

SECTION - C

Q. 16. Explain biological nitrogen fixation in leguminous plants. (3)

Q. 17. What is Respiratory Quotient (RQ)? What will be the RQ when carbohydrates and fats are used respectively as substrates in aerobic respiration? Give reason for the difference in the values (3)

Or

Why does Crassulacean Acid Metabolism pathway occur only in plants growing in dry conditions? Explain the steps involved in this pathway.

Q. 18. Explain the three different ways by which the carbon dioxide transported by the blood is released into the alveoli of lungs. (3)

Q. 19. Draw a labelled diagram of the neural chemical synapse showing the transmission of the nerve impulse across it. (3)

Q. 20. Briefly describe the stages of spermatogenesis in humans. (3)

Q. 21. Name the three basic types of cellular growth in the organisms. Explain each of them briefly. (3)

Q. 22. Give one factor responsible for causing thermal stratification in a deep lake. Why during autumn and spring is a bloom of phytoplankton growth observed? (3)

Q. 23. Describe how the population of fish-eating birds living on the banks of a lake, where DDT is regularly sprayed to check mosquito growth for many years, would differ from that living on the banks of another lake which is free from such insecticide. Name the phenomenon involved. (3)

Q. 24. Name and briefly explain any three types of cancer. (3)

Q. 25. Write the full name of the diagnostic technique MRI: Explain the principle on which this technique is based. (3)

SECTION - D

Q. 26. What is photorespiration? Explain the photorespiration pathway in the plants. (5)

Or

Explain the dual role of ribulose biphosphate carboxylase oxygenase (rubisco) in plant metabolism. Mention the conditions required, substrate and the end-product of each reaction.

Q. 27. What is a cardiac cycle? Explain the pumping action of heart during a cardiac cycle. **(5)**

Or

Where exactly is the cardiac impulse generated in the human heart? Give one reason for generation of the action potential in this part of the heart. Explain briefly how the action potential travels to auricles and ventricles.

Q. 28. Give three reasons to explain why sustainable agriculture is considered to be environment-friendly. Mention briefly any two ways how biotechnology can contribute to sustainable agriculture. **(5)**

Or

- i. Name the two types of lymphocytes involved in the specific immune system.
- ii. Mention the two types of specific immunity they generate.
- iii. Why is specific immunity considered to be unique in its function? Write any three special features of it.